

its clients. This can result in irregular income. Many claims adjusters receive additional bonuses or benefits as part of their job. Adjusters often are furnished a laptop computer, a cellular telephone, and a company car or are reimbursed for use of their own vehicle for business purposes.

Median annual earnings of insurance appraisers, auto damage, were \$40,000 in 2000. The middle 50 percent earned between \$31,900 and \$49,170. The lowest 10 percent earned less than \$25,030, and the highest 10 percent earned more than \$56,330. In 2000, median annual earnings in the industries employing the largest number of insurance appraisers, auto damage were:

Fire, marine, and casualty insurance .....	\$43,090
Insurance agents, brokers, and service .....	35,850

### Related Occupations

Insurance adjusters and examiners must determine the validity of a claim and negotiate a settlement. They also are responsible for determining how much to reimburse the client. Similar occupations include cost estimators, bill and account collectors, medical records and health information technicians, billing and posting clerks, and bookkeeping, accounting, and auditing clerks.

When determining the validity of a claim, insurance adjusters must inspect the damage in order to assess the magnitude of the loss. Workers who perform similar duties include fire inspectors and investigators, and construction and building inspectors.

Insurance investigators detect and investigate fraudulent claims and criminal activity. Their work is similar to that of detective and criminal investigators and of private detectives and investigators.

Like automotive body and related repairers and automotive service technicians and mechanics, auto damage appraisers must be familiar with the structure and functions of different automobiles and parts.

Other insurance-related occupations include insurance sales agents and insurance underwriters.

### Sources of Additional Information

General information about a career as a claims adjuster, appraiser, examiner, or investigator is available from the home offices of many life, health, and property and casualty insurance companies.

Information about licensing requirements for claim adjusters may be obtained from the department of insurance in each State.

For information about the Associate in Claims (AIC) designation, or the Introduction to Claims program, contact:

► Insurance Institute of America, 720 Providence Rd., P.O. Box 3016, Malvern, PA 19355-0716. Internet: <http://www.aicpcu.org>

For information on the Certified Professional Public Adjuster (CPPA) and the Senior Professional Public Adjuster (SPPA) programs, contact:

► National Association of Public Insurance Adjusters, 112-J Elden St., Herndon, VA 20170. Internet: <http://www.napia.com>

For information on the Registered Professional Adjuster (RPA) designation, contact:

► Registered Professional Adjusters, Inc., P.O. Box 3239, Napa, CA 94558. Internet: <http://www.rpa-adjuster.com>

For information on the Associate, Life and Health Claims (ALHC) and the Fellow, Life and Health Claims (FLHC) programs, contact:

► International Claim Association, 1255 23rd St. NW., Washington, DC 20037. Internet: <http://www.claim.org>

Information on careers in auto damage appraising can be obtained from:

► Independent Automotive Damage Appraisers Association, P.O. Box 1166, Nixa, MO 65714. Internet: <http://www.iada.org>

## Computer and Information Systems Managers

(O\*NET 11-3021.00)

### Significant Points

- Projected job growth stems primarily from rapid growth among computer-related occupations.
- Employers prefer managers with advanced technical knowledge acquired through computer-related work experience and formal education.
- Job opportunities should be best for applicants with a master's degree in business administration with technology as a core component.

### Nature of the Work

The need for organizations to incorporate existing and future technologies in order to remain competitive has become a more pressing issue over the last several years. As electronic commerce becomes more common, how and when companies use technology are critical issues. Computer and information systems managers play a vital role in the technological direction of their organizations. They do everything from constructing the business plan to overseeing network and Internet operations.

Computer and information systems managers plan, coordinate, and direct research and design the computer-related activities of firms. They determine technical goals in consultation with top management, and make detailed plans for the accomplishment of these goals. For example, working with their staff, they may develop the overall concepts of a new product or identify computer-related problems standing in the way of project completion.

Computer and information systems managers direct the work of systems analysts, computer programmers, support specialists, and other computer-related workers. These managers plan and coordinate activities such as the installation and upgrading of hardware and software, programming and systems design, the development of computer networks, and the implementation of Internet and intranet sites. They are increasingly involved with the upkeep and maintenance of networks. They analyze the computer and information needs of their organization and determine personnel and equipment requirements. They assign and review the work of their subordinates, and stay abreast of the latest technology in order to purchase necessary equipment.

The duties of computer and information systems managers vary with their specific titles. *Chief technology officers*, for example, evaluate the newest and most innovative technologies and determine how these can help their organization. The chief technology officer, who often reports to the organization's chief information officer, manages and plans technical standards and tends to the daily information technology issues of their firm. (Chief information officers are covered in a separate *Handbook* statement on top executives.) Because of the rapid pace of technological change, chief technology officers must constantly be on the lookout for developments that could benefit their organization. They are responsible for demonstrating to a company how information technology can



*Computer and information systems managers direct the technical work of their staff.*

be used as a competitive weapon that not only cuts costs, but also increases revenue.

*Management of information systems (MIS) directors* manage information systems and computing resources for entire organizations. They also work under the chief information officer and deal directly with lower-level information technology employees. These managers oversee a variety of user services such as an organization's help desk, which employees can call with questions or problems. MIS directors may also make hardware and software upgrade recommendations based on their experience with an organization's technology.

Computer and information system managers need strong communication skills. They coordinate the activities of their unit with those of other units or organizations. They confer with top executives; financial, production, marketing, and other managers; and contractors and equipment and materials suppliers.

### **Working Conditions**

Computer and information systems managers spend most of their time in an office. Most work at least 40 hours a week and may have to work evenings and weekends to meet deadlines or solve unexpected problems. Some computer and information systems managers may experience considerable pressure in meeting technical goals within short timeframes or tight budgets. As networks continue to expand and more work is done remotely, computer and information system managers have to communicate with and oversee offsite employees using modems, laptops, e-mail, and the Internet.

Like other workers who sit continuously in front of a keyboard, computer and information system managers are susceptible to eye-strain, back discomfort, and hand and wrist problems such as carpal tunnel syndrome.

### **Employment**

Computer and information systems managers held about 313,000 jobs in 2000. About 2 in 5 works in services industries, primarily for firms providing computer and data processing services. Other large employers include insurance and financial services firms, government agencies, and manufacturers.

### **Training, Other Qualifications, and Advancement**

Strong technical knowledge is essential for computer and information systems managers, who must understand and guide the work

of their subordinates, yet also explain the work in nontechnical terms to senior management and potential customers. Therefore, these management positions usually require work experience and formal education similar to that of other computer occupations.

Many computer and information systems managers have experience as systems analysts; others may have experience as computer support specialists, programmers, or other information technology professionals. A bachelor's degree is usually required for management positions, although employers often prefer a graduate degree, especially a master's degree in business administration (MBA) with technology as a core component. This degree differs from a traditional MBA in that there is a heavy emphasis on information technology in addition to the standard business curriculum. This becomes important because more computer and information systems managers make not only important technology decisions but also important business decisions for their organizations. A few computer and information systems managers may have only an associate degree, provided they have sufficient experience and were able to learn additional skills on the job.

Computer and information systems managers need a broad range of skills. In addition to technical skills, employers also seek managers with strong business skills. Employers want managers who have experience with the specific software or technology to be used on the job, as well as a background in either consulting or business management. The expansion of electronic commerce has elevated the importance of business insight, because many managers are called upon to make important business decisions. Managers need a keen understanding of people, processes, and customer's needs.

Computer and information systems managers must possess strong interpersonal, communication, and leadership skills because they are required to interact not only with their employees, but also with people inside and outside their organization. They must also possess great team skills to work on group projects and other collaborative efforts. Computer and information systems managers increasingly interact with persons outside their organization, reflecting their emerging role as vital parts of their firm's executive team.

Computer and information systems managers may advance to progressively higher leadership positions in their field. Some may become managers in nontechnical areas such as marketing, human resources, or sales. In high technology firms, managers in nontechnical areas often must possess the same specialized knowledge as do managers in technical areas.

### **Job Outlook**

Employment of computer and information systems managers is expected to increase much faster than the average for all occupations through the year 2010. Technological advancements will increase the employment of computer-related workers; as a result, the demand for managers to direct these workers also will increase. In addition, job openings will result from the need to replace managers who retire or move into other occupations. Opportunities for obtaining a management position will be best for workers possessing an MBA with technology as a core component, advanced technical knowledge, and strong communication and administrative skills.

Rapid growth in employment can be attributed to the explosion in information technology and the fast-paced expansion of the computer and data processing services industry. In order to remain competitive, firms will continue to install sophisticated computer networks and set up more complex Internet and intranet sites. Keeping a computer network running smoothly is essential to almost

every organization. Firms will be more willing to hire managers who can accomplish that.

The security of computer networks will continue to increase in importance as more business is conducted over the Internet. Organizations need to understand how their systems are vulnerable and how to protect their infrastructure and Internet sites from hackers, viruses, and other acts of cyber-terrorism. As a result, there will be a high demand for managers proficient in computer security issues.

Due to the explosive growth of electronic commerce and the ability of the Internet to create new relationships with customers, the role of computer and information systems managers will continue to evolve in the future. They will continue to become more vital to their companies and the environments in which they work. The expansion of e-commerce will spur the need for computer and information systems managers with both business savvy and technical proficiency.

Opportunities for those who wish to become computer and information systems managers should be closely related to the growth of the occupations they supervise and the industries in which they are found. (See the statements on computer programmers; computer software engineers; computer support specialists and systems administrators; and systems analysts, computer scientists, and database administrators elsewhere in the *Handbook*.)

### Earnings

Earnings for computer and information systems managers vary by specialty and level of responsibility. Median annual earnings of these managers in 2000 were \$78,830. The middle 50 percent earned between \$59,640 and \$100,820. The lowest 10 percent earned less than \$44,090, and the highest 10 percent earned more than \$127,460. Median annual earnings in the industries employing the largest numbers of computer and information systems managers in 2000 were:

Professional and commercial equipment .....	\$92,270
Computer and data processing services .....	88,410
Commercial banks .....	82,490
Management and public relations .....	73,930
Colleges and universities .....	64,460

According to Robert Half International Consulting, average starting salaries in 2001 for high-level information technology managers ranged from \$92,250 to \$152,500. According to a 2001 survey by the National Association of Colleges and Employers, starting salary offers for those with an MBA, a technical undergraduate degree, and 1 year or less of experience averaged \$61,196; for those with a master's degree in management information systems/business data processing, \$57,225.

In addition, computer and information systems managers, especially those at higher levels, often receive more benefits—such as expense accounts, stock option plans, and bonuses—than do non-managerial workers in their organizations.

### Related Occupations

The work of computer and information systems managers is closely related to that of computer programmers, computer software engineers; systems analysts, computer scientists, and database administrators; and computer support specialists and systems administrators. Computer and information systems managers also have some high-level responsibilities similar to those of top executives.

### Sources of Additional Information

For information about a career as a computer and information systems manager, contact the sources of additional information for the various computer occupations discussed elsewhere in the *Handbook*.

## Construction Managers

(O\*NET 11-9021.00)

### Significant Points

- Construction managers must be available—often 24 hours a day—to deal with delays, bad weather, or emergencies at the jobsite.
- Employers prefer individuals who combine construction industry work experience with a bachelor's degree in construction science, construction management, or civil engineering.
- Excellent opportunities are expected for qualified managers.
- Employment can be sensitive to the short-term nature of many construction projects and cyclical fluctuations in construction activity.

### Nature of the Work

Construction managers plan and direct construction projects. They may have job titles such as constructor, construction superintendent, general superintendent, project engineer, project manager, general construction manager, or executive construction manager. Construction managers may be owners or salaried employees of a construction management or contracting firm, or may work under contract or as a salaried employee of the owner, developer, contractor, or management firm overseeing the construction project. The *Handbook* uses the term “construction manager” to describe salaried or self-employed managers who oversee construction supervisors and workers.

In contrast with the *Handbook* definition, “construction manager” is defined more narrowly within the construction industry to denote a management firm, or an individual employed by such a firm, involved in managerial oversight of a construction project. Under this definition, construction managers usually represent the owner or developer with other participants throughout the project. Although they usually play no direct role in the actual construction of a structure, they typically schedule and coordinate all design and construction processes, including the selection, hiring, and oversight of specialty trade contractors.

Managers who work in the construction industry, such as general managers, project engineers, and others, increasingly are called *constructors*. Through education and past work experience, this broad group of managers manages, coordinates, and supervises the construction process from the conceptual development stage through final construction on a timely and economical basis. Given designs for buildings, roads, bridges, or other projects, constructors oversee the organization, scheduling, and implementation of the project to execute those designs. They are responsible for coordinating and managing people, materials, and equipment; budgets, schedules, and contracts; and safety of employees and the general public.

On large projects, construction managers may work for a *general contractor*—the firm with overall responsibility for all activities. There, they oversee the completion of all construction in accordance with the engineer's and architect's drawings and specifications and prevailing building codes. They arrange for *trade contractors* to perform specialized craftwork or other specified construction work. On small projects, such as remodeling a home, a self-employed construction manager or skilled trades worker who directs and oversees employees often is referred to as the construction “contractor.”